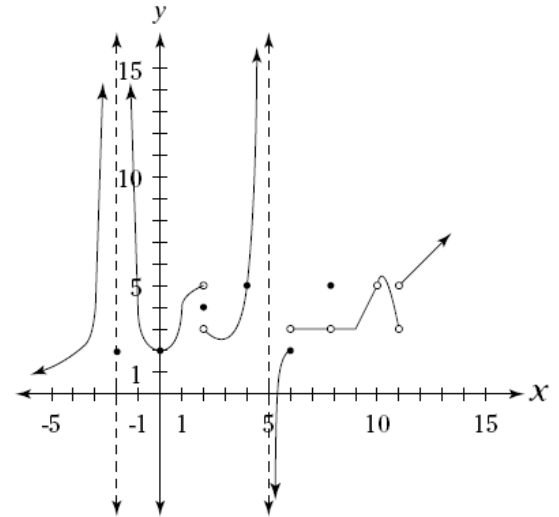


PCPAP TEST: Chapter 1.1-2.2 2016-A  
No Calculator

Part I: Multiple Choice. Put the CAPITAL letter in each blank to the left of the problem number.

The graph of  $g(x)$  is given at right. Use the graph to answer questions 1-4.



\_\_\_\_\_ 1.  $\lim_{x \rightarrow 2^-} g(x) =$  (A) 3 (B) 4 (C) 5 (D) 6 (E) DNE

\_\_\_\_\_ 2.  $\lim_{x \rightarrow 0} g(x) =$  (A) 2 (B) 3 (C) 4 (D) 5 (E) DNE

\_\_\_\_\_ 3.  $\lim_{x \rightarrow 6} g(x) =$  (A) 2 (B) 3 (C) 4 (D) 5 (E) DNE

\_\_\_\_\_ 4.  $g(8) =$  (A) 3 (B) 4 (C) 5 (D) 6 (E) DNE

\_\_\_\_\_ 5. The function  $f(x) = \frac{x^2 + 10x + 9}{x^2 + 6x + 5}$  has a removable point discontinuity at

- (A)  $(-1, 2)$  (B)  $(-9, 0)$  (C)  $(-5, 2)$  (D)  $(0, \frac{9}{5})$  (E)  $(-1, -2)$

\_\_\_\_\_ 6. Simplify:  $\frac{4x^2y^{-2} + 3x^{-2}y^3}{xy^{-1} + 2x}$

- (A)  $\frac{4x^4 + 3y^5}{x^3y + 2x^3y^2}$  (B)  $\frac{4x^4 + 3y^5}{x^3y + 2x^3y}$  (C)  $\frac{4x^4y + 3xy^5}{xy + 2x^3y}$  (D)  $\frac{4xy + 3y^2}{x^2y + 2x^2}$  (E)  $\frac{4x^4 + 3y^5}{2x^3y + x^3y^2}$

\_\_\_\_\_ 7. Evaluate  $\lim_{x \rightarrow \infty} \frac{3x^5 - 2x^7 + 7}{-3x^6 - 5x^3 + 4x^2}$

(A) 0      (B)  $\frac{5}{3}$       (C)  $-\frac{5}{3}$       (D)  $\infty$       (E)  $-\infty$

\_\_\_\_\_ 8. Find the domain of  $k(x) = \frac{\sqrt{x-3}}{\sqrt{x^2 - 6x - 16}}$

(A)  $(8, \infty)$     (B)  $[3, 8) \cup (8, \infty)$     (C)  $(-5, 4)$     (D)  $(-\infty, -2) \cup (8, \infty)$     (E)  $[3, \infty)$

\_\_\_\_\_ 9. Which of the following is NOT an equation of an asymptote on the graph of

$$f(x) = \frac{x+4}{x^3 + 5x^2 + 6x}$$

- (A)  $y=0$     (B)  $x=-2$     (C)  $x=-4$     (D)  $x=0$     (E)  $x=-3$

Part II: Free Response

*Show all work in a logical, vertical sequence and use proper notation. Your bottom line in each problem will be your answer. Work each problem in the space provided.*

10. For the following functions,  $f(x) = 5 + 2\sqrt{12 + 4x}$ ,  $g(x) = \sqrt{x - 11}$ ,  $h(x) = x^2 + 6x - 16$  answer the following questions.

(a) Set up and simplify the **equation** for the function  $P(x) = g(h(x))$ , and then find the domain. Show the work that leads to your answer. Give your domain in either proper set or interval notation.

(b) Set up the **equation** for the function  $R(x) = \frac{2x - 8}{g(x)}$ , and then find the domain of  $R(x)$ . Show the work that leads to your answer. Give your domain in either proper set or interval notation.

(c) Set up the **equation** for the function  $J(x) = \frac{f(x)}{h(x)}$ , and then find the domain of  $J(x)$ . Show the work that leads to your answer. Give your domain in either proper set or interval notation.

(d) Set up and **completely simplify**  $\frac{h(x+p) - h(x)}{p}$  for some constant  $w$ . Show the work that leads to your answer.

